3.4 AIR QUALITY

Significance Criteria

Significance criteria for NEPA purposes regarding air quality impacts of the Proposed Project includes conformity with the National Ambient Air Quality Standards (NAAQS) set forth by the Environmental Protection Agency (EPA) under the Federal Clean Air Act (FCAA) (42 U.S.C. 7401 to 7671). The EPA, having jurisdiction by law under 40 CFR 1508.15, is responsible for review and comment on air quality and other impacts and determinations of significance under Section 309 of the Clean Air Act.

3.4.1 REGULATORY CONTEXT

CRITERIA POLLUTANTS

Criteria pollutants are pollutants that have been identified as being both common and detrimental to human health. The USEPA currently designates six pollutants as criteria pollutants: carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), ozone (O_3), lead (Pb), and particulate matter (PM) (USEPA, 2004).

Ozone

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and oxides of nitrogen (NOx), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ground level ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

The USEPA issued the 8-hour ozone standard in July 1997, based on information demonstrating that the 1-hour standard was inadequate for protecting public health. Scientific information shows that ozone can affect human health at lower levels, and over longer exposure times than one hour. The 8-hour ozone standard is 0.08 parts per million (ppm), averaged over eight hours. The 1- hour standard is 0.12 ppm, measured in hourly readings.

CO

CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream. Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

Federal CO standards have been set for both 1-hour and 8-hour averaging times. The Federal 1-hour standard is 35 ppm and 9 ppm for the 8-hour averaging period.

PM10

Health concerns associated with suspended PM focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs (generally designated as PM_{10}). Particulate matter (PM_{10}) conditions in Kenosha County reflect urban sources, including industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere. The Federal PM_{10} standards are 150 micrograms per cubic meter ($\mu g/m^3$) as a 24-hour average, and 50 $\mu g/m^3$ as an annual arithmetic mean.

A Federal standard for PM less than 2.5 microns in diameter (generally designated as $PM_{2.5}$) was issued in July 1997 by Executive Order of the President. $PM_{2.5}$ is sometimes referred to as "fine particulate matter." The new $PM_{2.5}$ standard has been set at a concentration of 15 $\mu g/m^3$ annually and 65-$\mu g/m^3$ daily. The Federal standards for PM_{10} are being maintained so that relatively larger, courser particulate matter continues to be regulated.

Hazardous Air Pollutants (HAP)

Toxic air pollutants, also known as hazardous air pollutants, are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. People exposed to toxic air pollutants at sufficient concentrations and durations may have an increased chance of getting cancer or experiencing other serious health effects. These health effects can include damage to the immune system, as well as neurological, reproductive (e.g., reduced fertility), developmental, respiratory and other health problems. In addition to exposure from breathing air toxics, some toxic air pollutants such as mercury can deposit onto soils or surface waters, where they are taken up by plants and/or animals and eventually magnified up through the food chain. Like humans, animals may experience health problems if exposed to sufficient quantities of air toxics over time.

The USEPA is working with state, local, and tribal governments to reduce air toxics releases of 188 pollutants to the environment. Examples of toxic air pollutants include benzene, which is found in gasoline; perchloroethlyene, which is emitted from some dry cleaning facilities; and methylene chloride, which is used as a solvent and paint stripper by a number of industries. Examples of other listed air toxics include dioxin, asbestos, toluene, and metals such as cadmium, mercury, chromium, and lead compounds.

GOVERNING STATUTES

Federal Clean Air Act

The FCAA was enacted in 1970 and last amended in 1990 (42 USC § 7401 *et seq.*) with the purpose of controlling air pollution and providing a framework for national, state and local air

pollution control efforts. Basic components of the FCAA and its amendments include national ambient air quality standards (NAAQS) for major air pollutants considered harmful to public health and the environment. The FCAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

National Ambient Air Quality Standards (NAAQS)

For some of the criteria pollutants, the USEPA and states have identified air quality standards expressed in more than one averaging time in order to address the typical exposures found in the environment. For example, CO is expressed as a one-hour averaging time and an eight-hour averaging time. Federal regulations set criteria pollutant concentration limits (NAAQS) for each air basin in parts per million or micrograms per cubic meter, as shown in **Table 3.4-1**. The Wisconsin Department of Natural Resources Bureau of Air Management collects air quality data through monitoring stations located throughout the region. Data from each monitoring station is continuously compiled and submitted to the USEPA annually.

NAAQS Attainment Status

The USEPA has identified non-attainment and attainment areas for each criteria air pollutant. The FCAA uses the classification system to design clean-up requirements appropriate for the severity of the pollution and set realistic deadlines for reaching clean-up goals. The USEPA has also classified the non-attainment areas according to the level of pollution in each. There are five classes of non-attainment areas, ranging from marginal to extreme.

In April 2004, the USEPA introduced new 8-hour O_3 attainment designations. This new standard requires compliance with the 8-hour averaging time conformance standards instead of the 1-hour averaging time conformance standards. According to the NAAQS, Kenosha County is designated as non-attainment under the 1-hour ozone standards and non-attainment under the 8-hour ozone standards (**Table 3.4-2**).

Kenosha County is classified as an attainment area for all criteria pollutants except ozone. Ozone is formed as a reaction product of emissions from a variety of sources, but is mainly attributable to the interactions of volatile organic compounds (VOCs), nitrogen oxides (NOx) and sunlight. The predominant source of VOC and NOx in Kenosha County is transport into the county from a southerly direction from another metropolitan area. Within the County, sources of VOC are primarily stationary in nature. However, mobile sources of VOC and NOx in the County include vehicle emissions that also contribute to NOx and VOC levels in the Milwaukee-Racine severe ozone non-attainment area.

TABLE 3.4-1
AMBIENT AIR QUALITY STANDARDS APPLICABLE IN WISCONSIN

Pollutant	Symbol	Average Time	Standard, as parts per million	Standard, as micrograms per cubic meter	Violation Criteria
Ozone	O_3	1 hour	0.12	235	If exceeded on more than 3 days in 3 years
		8 hours	0.08	N/A	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9	10,000	If exceeded on more than 1 day per year
		1 hour	35	40,000	If exceeded on more than 1 day per year
Nitrogen dioxide	NO_2	Annual average 1 hour	0.053	100	If exceeded
			N/A	N/A	N/A
Sulfur dioxide	SO_2	Annual average	0.03	80	If exceeded
		24 hours	0.14	365	If exceeded on more than 1 day per year
		1 hour	N/A	N/A	N/A
Hydrogen sulfide	H_2S	1 hour	N/A	N/A	N/A
Vinyl chloride	C_2H_3Cl	24 hours	N/A	N/A	N/A
Inhalable particulate matter	PM10	Annual geometric mean	N/A	N/A	N/A
		Annual arithmetic mean	N/A	50	If exceeded
		24 hours	N/A	150	If exceeded on more than 1 day per year
Fine particulate matter	PM2.5	Annual arithmetic mean	N/A	15	If exceeded
		24 hours	N/A	65	If exceeded on more than 1 day per year
Sulfate particles	SO_4	24 hours	N/A	N/A	N/A
Lead particles	Pb	Calendar quarter	N/A	1.5	If exceeded on more than 1 day per year
		30 days	N/A	60	N/A

NOTES: All standards are based on measurements at 25°C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
N/A = not applicable.
SOURCE: USEPA, 2005

TABLE 3.4-2
KENOSHA COUNTY FEDERAL NAAQS ATTAINMENT STATUS

Ambient Air Quality Standard (NAAQS)	Federal Attainment Status
One-hour Ozone	Non-attainment
Eight-hour Ozone	Non-attainment
PM_{10}	Attainment
$PM_{2.5}$	Unclassified
Carbon Monoxide	Attainment
Nitrogen Dioxide	Attainment
Sulfur Dioxide	Attainment
Lead	Attainment

SOURCE: USEPA 2005; AES, 2005

Wisconsin's State Implementation Plan (SIP) for Ozone

Wisconsin's SIP for achieving compliance with the ozone ambient air quality standards includes the use of Federally mandated vehicle control programs consisting of enhanced vehicle inspection/maintenance, the use of reformulated gasoline and Stage 2 gasoline fueling vapor recovery.

Modeling Supporting the WDNR's 1989 Indirect Carbon Monoxide (CO) Source Permit

The 1989 Indirect CO Source Permit issued by the WDNR for the existing DGP was based on the use of models: MOBILE3 for emissions factors and CALINE 3 for dispersion. WDNR was contacted regarding the existing permit that is based on these outdated models. Although an older model, the output from the 1989 models continues to be the basis for the existing WDNR Indirect Source Permit for the existing DGP operations.

The Wisconsin indirect source air permit approval process requires completion of an air quality analysis to demonstrate that predicted carbon monoxide (CO) concentrations in the vicinity of the worst case facility intersection will not exceed the 1-hour and 8-hour CO standards. The air quality analysis specifically looked at the impact from slow moving traffic entering and exiting the facility under peak attendance conditions, and includes a consideration of peak traffic on exiting and entering roadways.

Air permit approvals contain conditions that require improvements to entrance/exit road and intersections to insure protection of ambient air quality during the operation of the facility. With the assistance of the WDNR staff, our review indicates that the 1989 modeling and analysis conservatively over-predicts the current ambient air quality impacts from peak traffic flow at the existing DGP facility, because of the following assumptions and methodologies used in the 1989 analysis:

1. The mass emission rate for CO is substantially larger than for any other air pollutant. Air emissions impact based on CO emissions will ensure that the impact of the other pollutants will also be within applicable ambient air quality standards.

2. The NAAQS for CO includes a 1-hour and 8-hour standard. These short-term standards were developed because of short-term health impacts that can occur from unacceptably high CO concentrations. Other important criteria pollutants emissions from mobile sources do not require short-term standards, making CO the most appropriate criteria air pollutant for determining ambient air quality impacts from mobile sources. Emissions of other criteria air pollutants from mobile sources will have a less significant health impact, on an equal mass basis.

3. The receptors chosen to evaluate CO impacts were located near the worst-case (highest volume of slow moving traffic) intersection at DGP, the State Hwy 158 exit. These receptors were located 50 feet north or south and east or west of the road right-of-way lines along State Hwy 158 and the entrance/exit road. The air emissions impact from traffic at the facility at other locations adjacent to the facility property would be less, due to the increased distance from the major source of emissions, vehicles exiting onto State Hwy 158.

On-site air-quality monitoring for CO was performed at DGP from July 1990 to July 1992 to fulfill requirements of their indirect source air permit. The maximum 1-hour average CO concentration from July 1990 to March 1992 ranged from 1.4 to 15.4 parts per million (ppm) and the maximum 8-hour average concentration during this period ranged from 0.7 to 6 ppm CO (Triad Engineering, Inc., 1992). These maximum CO concentrations were below permit standards of 35 ppm (one-hour) and 9 ppm (eight-hour). No other on-site air quality monitoring has been required or conducted.

Conformity

The general conformity rule implements Section 176 of the FCAA, which requires that a Federal agency ensure conformity with an approved SIP for those air emissions that would be brought about by a Federal action (USEPA, 2004). There are two phases to general conformity: 1) the first phase is the conformity review process entailing a review of each analyzed alternative to assess whether a conformity determination is necessary; and 2) the second phase is the conformity determination process, which demonstrates how an action would conform with the applicable implementation plan (usually the SIP). The first step compares emissions estimates for the project to the appropriate general conformity *de minimus* threshold based on non-attainment type. If the emission estimates from step one are below the thresholds, then a general conformity determination is not necessary and step two is not required.

The conformity regulations apply to a proposed Federal action that would cause emissions of criteria air pollutants above certain levels to occur in locations designated as non-attainment or maintenance areas for the emitted pollutants. If a Federal action occurs in a location designated as attainment or unclassified then the general conformity regulation does not apply to the project.

FEDERAL CLEAN AIR ACT AND INDIAN TRIBES

The FCAA authorizes the USEPA to specify provisions of the FCAA under which Indian Tribes may be treated in the same manner as States. For those provisions specified, a Tribe may assume jurisdiction by law under 40 CFR 1508.15, and develop and implement one or more of its own air quality programs directly under the FCAA, rather than being regulated by the USEPA. The USEPA issued its final rule on this issue in 1998. The rule provides that Tribes will be treated in the same manner as States for virtually all FCAA programs. Tribes with USEPA-approved Clean

Air Act programs are granted authority over all air resources within the exterior boundaries of a reservation (including non-Indian owned fee lands). No such program currently exists for the Tribe; therefore, the USEPA retains permitting authority for sources of air pollution located on the project site.

GOVERNING AGENCIES

Environmental Protection Agency (USEPA)

The USEPA is the Federal agency having jurisdiction by law under 40 CFR 1508.15 to oversee state air programs as they relate to the FCAA, approving SIPs, establishing NAAQS and setting emission standards for mobile sources under Federal jurisdiction.

Wisconsin Department of Natural Resources Bureau of Air Management

The Wisconsin Department of Natural Resources Bureau of Air Management (DNR) administers the statewide air management program, having jurisdiction by law under 40 CFR 1508.15. To manage the state's air quality, DNR uses both a network of air quality monitors and a series of air pollution control rules that limit emissions from air pollution sources based on various criteria.

3.4.2 KENOSHA PROJECT AREA AND VICINITY

EXISTING AIR QUALITY

Monitoring Data

Air quality data for the period from 2002 through 2004 from monitoring stations near the project site are summarized in **Table 3.4-3**. The Kenosha County monitoring station is located at 11838 First Court in Pleasant Prairie, Wisconsin, approximately 17 miles to the southeast of the project site. The Milwaukee County monitoring station is located at 2300 North Martin Luther King Jr. Drive in Milwaukee, Wisconsin, approximately 35 miles to the north of the project site. Because many of the stations do not monitor all pollutants, a distinct set of monitoring stations were chosen for each pollutant that would best represent conditions at the project site or the regional conditions.

Odors

While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments. Facilities with the potential to generate offensive odors include wastewater treatment plants, landfills, processing plants, and agricultural activities. There were no odors detected at the project site during site assessment.

SENSITIVE RECEPTORS

Sensitive receptors are facilities that house or attract children, the elderly, people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools,

TABLE 3.4-3
SUMMARY OF CARBON MONOXIDE, OZONE, AND PM10 MONITORING DATA

Station Location	Yearly Monitoring Data		
	2002	2003	2004
Carbon Monoxide			
Milwaukee County--2300 North Martin Luther King Jr. Drive	4.2 ppm	5.0 ppm	3.9 ppm
Ozone (Hourly)			
Kenosha County—11838 First Court	0.110 ppm	0.144 ppm	0.085 ppm
Ozone (8-Hour)			
Kenosha County—11838 First Court	0.116 ppm	0.088 ppm	0.069 ppm
PM10 (Annual Mean)			
Milwaukee County—2300 North Martin Luther King Jr. Drive	24 µg/m^3	24 µg/m^3	23 µg/m^3
PM 2.5 (Annual Mean)			
Kenosha County—11838 First Court	11.6 µg/m^3	10.8 µg/m^3	10.5 µg/m^3

NOTES: ppm = parts per million
µg/m^3= micrograms per cubic meter
SOURCE: USEPA, 2005; AES, 2005

convalescent facilities, and residential areas are examples of sensitive receptors. The land uses immediately surrounding the project site include agricultural uses. The nearest residence is located adjacent to the project site just south of 60th Street. There are no major sources of air pollution in the immediate vicinity of the project site. Ambient concentrations of air pollutants generated from the site and immediately surrounding area is mainly attributable to vehicles at DGP during race events, and traffic on Interstate 94, State Trunk Highway 158, and 88th Avenue (County Highway H) and 60th Street (County Highway K).

Since Kenosha is in non-attainment for ozone only, additional monitoring of ozone is shown in **Table 3.4-4**. The additional air monitoring stations that are located closest to the project site are in the City of Kenosha, 7944 Sheridan Road (approximately six miles east of the project site), UW Parkside (approximately 9 miles northeast of the project site) and the Town of Pleasant Prairie (approximately 9 miles southeast of the project site). Review of the 2003 calendar year of data at each station indicates elevated ozone levels. Ozone standards (8-hour) in the Town of Pleasant Prairie were exceeded five times; similar standards were exceeded four times at Parkside in Kenosha, and five times at 7944 Sheridan Road in Kenosha. No other criteria pollutant exceedances were observed at these locations.

TABLE 3.4-4
MONITORING DATA FOR OZONE IN KENOSHA COUNTY CALENDAR YEAR 2003

Number of Exceedences	Highest Maximum	2nd Highest Maximum	3rd Highest Maximum	4th Highest Maximum
City of Kenosha - UW Parkside: *Ozone 1-hour Average*				
0	0.112	0.107	0.105	0.101
City of Kenosha - UW Parkside: *Ozone 8-hour Average*				
4	0.092	0.090	0.090	0.088
City of Kenosha 7944 Sheridan Road: *Ozone 1-hour Average*				
0	0.106	0.104	0.102	0.099
City of Kenosha 7944 Sheridan Road: *Ozone 8-hour Average*				
5	0.091	0.088	0.086	0.085
Town of Pleasant Prairie - Chiwaukee Prairie: *Ozone 1-hour Average*				
0	0.114	0.110	0.106	0.102
Town of Pleasant Prairie - Chiwaukee Prairie: *Ozone 8-hour Average*				
5	0.097	0.095	0.091	0.088

NOTES: City of Kenosha - UW Parkside Monitor ID Number: 550590022
City of Kenosha - 7944 Sheridan Road Monitor ID Number: 550590002
Town of Pleasant Prairie - Chiwaukee Prairie Monitor ID Number: 550590019
SOURCE: USEPA, 2004

3.4.3 KESHENA SITE AND VICINITY

CLIMATE

The Keshena site is located within Menominee County. The average temperature for Menominee County in winter is 12°F and in summer the average temperature is 68°F. Average yearly wind speed is approximately 5 miles per hour (mph). Snow falls from October to April with peak snowfall in January and annual snowfall averages approximately 40.1 inches. Precipitation occurs year round with peaks in August and annual precipitation averages 32.4 inches.

EXISTING AIR QUALITY

NAAQS Attainment Status

As discussed above, the USEPA has identified non-attainment and attainment areas for each criteria air pollutant. The FCAA uses the classification system to design clean-up requirements appropriate for the severity of the pollution and set realistic deadlines for reaching clean-up goals. Menominee County is in Federal attainment for all criteria pollutants, as shown in **Table 3.4-5**.

Monitoring Data

Menominee County is located within the Northeast Air Quality planning region. Air quality data for the period from 2002 through 2004 from monitoring stations nearest the project site are summarized in **Table 3.4-6**.

TABLE 3.4-5
MENOMINEE COUNTY FEDERAL NAAQS ATTAINMENT STATUS

Ambient Air Quality Standard (NAAQS)	Federal Attainment Status
One-hour Ozone	Attainment
Eight-hour Ozone	Attainment
PM_{10}	Attainment
$PM_{2.5}$	Unclassified
Carbon Monoxide	Attainment
Nitrogen Dioxide	Attainment
Sulfur Dioxide	Attainment
Lead	Attainment

SOURCE: USEPA 2005; AES, 2005

TABLE 3.4-6
SUMMARY OF CARBON MONOXIDE, OZONE, AND PM10 MONITORING DATA

Station Location	Yearly Monitoring Data		
	2002	2003	2004
Carbon Monoxide (hourly)			
Milwaukee – 7528 W. Appleton Avenue	4.2 ppm	5.0 ppm	3.9 ppm
Carbon Monoxide (8-Hour)			
Milwaukee – 7528 W. Appleton Avenue	3.1 ppm	2.6 ppm	2.1 ppm
Ozone (Hourly)			
Brown County—1415 East Walnut	0.094 ppm	0.104 ppm	0.072 ppm
Ozone (8-Hour)			
Brown County—1415 East Walnut	0.084 ppm	0.077 ppm	0.063 ppm
PM10 (Annual Mean)			
Brown County—1415 East Walnut	--	19 $\mu g/m^3$	14 $\mu g/m^3$
PM 2.5 (Annual Mean)			
Brown County—1415 East Walnut	11.8 $\mu g/m^3$	11.3 $\mu g/m^3$	11.5 $\mu g/m^3$

NOTES: ppm = parts per million
$\mu g/m^3$= micrograms per cubic meter
SOURCE: USEPA, 2005; AES, 2005

The nearest monitoring station for most of the criteria pollutants is located in Brown County, approximately 40 miles southeast of the project site. There are few CO monitoring stations within Wisconsin, one located in Racine County and the other in Milwaukee County. The nearest monitoring station for CO is located at 7528 W. Appleton Avenue in Milwaukee, approximately 160 miles south of the Keshena site. Although, due to distance, the monitoring stations do not provide data that is site specific, the stations do provide a context for regional air quality planning base emissions.

Odors

There were no odors detected at the project site during the site assessment.

SENSITIVE RECEPTORS

Off reservation sensitive receptors are located over a half-mile from the project site.